

A REVIEW OF THE GENUS *CRITONIOPSIS* IN
CENTRAL AND SOUTH AMERICA
(VERNONIEAE: ASTERACEAE)

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Abstract.—The genus *Critoniopsis* Schultz-Bip. is expanded to contain 76 species and includes the Central American species of *Eremosis* (DC.) Gleason. Additional species from South America are transferred to the genus including a number with opposite leaves such as *Vernonia stellata* of Brazil. Opposite-leaved *Critoniopsis dorrii*, *C. palaciosii* of Ecuador, and *C. quillonensis* of Peru, subopposite-leaved *C. cotopaxensis* of Ecuador, and alternate-leaved *C. lewisii* and *C. steinbachii* of Bolivia and *C. uribei* of Colombia are described as new.

A group of neotropical Vernonieae having few florets in the heads and deciduous inner involucre bracts has been treated in various papers since 1900 under two different names, *Eremosis* and *Critoniopsis*, sometimes at the sectional level under *Vernonia* Shreb. and at other times as distinct genera. The two names have been applied regionally (Gleason 1906, 1922; Cuatrecasas 1956; Robinson 1980; Jones 1973), and their synonymy has often been casually assumed. A long overdue broader summary is offered here. *Critoniopsis* is treated at the generic level with *Eremosis* as a synonym. All the presently accepted members of the genus are listed, and all the species not previously placed in *Critoniopsis* are here transferred to the genus.

The first generic name for the group, *Turpinia* Lexarza (La Llave & Lexarza, 1824), was a later homonym. The oldest valid name for the group, *Monosis* sect. *Eremosis* DC. (1836), was established for three Mexican species of which *Monosis salicifolia* DC. has been treated as the lectotype (Gleason 1906, 1922; Jones 1973). *Eremosis* was later raised to generic rank by Gleason (1906, 1922). *Critoniopsis* Schultz-Bip. was first described at the generic level in 1863 to include a single Colombian species, *C. lindenii* Schultz-Bip, but the name was subsequently

used only at a sectional level under *Vernonia* by various authors including Baker (1873) for Brazilian species, Gleason (1923) for Bolivian species, and Cuatrecasas (1956) for northern Andean species. The genus *Tephrothamnus* Schultz-Bip. (1863) was described at the same time as *Critoniopsis*, but was effectively reduced to synonymy by Badillo (1983) with the transfer of *T. paradoxa* Schultz-Bip. to *Critoniopsis*.

The nomenclatural history has resulted in the name *Eremosis* having priority at the sectional level and *Critoniopsis* having priority at the generic level. The various authors using *Critoniopsis* as a section of *Vernonia* did not consider *Eremosis*, and Gleason (1922), in his use of *Eremosis* as a genus, treated *Critoniopsis* as a doubtful synonym. Still, none of the authors provided any differences on which separate sections or genera could be based. In the reestablishment of *Critoniopsis* at the generic level by Robinson (1980), the possible synonymy of *Eremosis* was not a factor nomenclaturally and was not mentioned. Among recent authors, only Jones (1973) clearly stated that *Critoniopsis* and *Eremosis* were synonyms, and he used the appropriate name at the sectional level, *Vernonia* section *Eremosis*.

The present paper accepts that the two

groups, *Critoniopsis* and *Eremosis*, are synonyms, and that the combined group deserves generic status. There are some general differences in aspect of the Mesoamerican material, with its narrower heads and narrower involucre bracts, more often setuliferous achenes, slightly pointed hairs on the style branches, and the more often pubescent upper leaf surfaces. Nevertheless, intergradations and exceptions in the characters preclude recognition of the Mesoamerican material as a separate genus.

Robinson (1980) emphasized the comparatively close relationship of *Critoniopsis* to *Piptocarpha* R. Br., and Robinson et al. (1980) established the subtribe Piptocarphinae for the three genera, *Piptocarpha*, *Pollalesta* H.B.K., and *Critoniopsis*. Of these three genera, *Pollalesta* is distinguished by the modified pappus of straps and scales rather than capillary bristles. The style base of the latter also seems to characteristically lack a sclerified basal node. *Piptocarpha* has traditionally been distinguished by having tails on the anthers, but the most significant difference is the sclerified and sharply pointed nature of those tails. Some species presently placed in *Piptocarpha*, like *P. luschnathii* Krasch. (*Stiffitia axillaris* Barroso & G. da Vinha) have blunt-tipped sclerified tails. Basal tails are actually present in many species of *Critoniopsis*, but the cells below the polleniferous part of the anther are thin-walled, and the tip is often distinctly toothed. Two additional genera that have been more recently recognized as members of the Piptocarphinae, the opposite-leaved *Joseanthus* H. Robinson and the alternate-leaved *Cuatrecasanthus* H. Robinson, both have corollas that have lobes separated to the base of the limb at the level of insertion of the anther filaments. Thus the corollas have no throat. *Huberopappus* Pruski, *Ekmania* Gleason, and *Gorceixia* Baker were referred to the Piptocarphinae by Pruski (1992). The three genera all have a strongly coroniform pappus. The most recently recognized member of the subtribe, *Dasyandantha* H.

Robinson, has numerous hairs on the inner and outer surfaces of the corolla throat.

The broad interpretation here of the genus *Critoniopsis* includes almost all opposite-leaved Vernoniae of the western Hemisphere except those in the closely related genus *Joseanthus* (Robinson, 1989). One exception is *Lepidaploa canescens* var. *opposita* (H. Robinson) H. Robinson (1990a) of northern Colombia. It should be noted that, although opposite leaves are a tendency within *Critoniopsis*, few of the species of the genus having the characteristic seem to be immediate relatives of each other. The number of florets in the *Critoniopsis* head is usually less than 10, but it has previously been noted to be as high as 15 or 16 in *C. pallida* (Cuatrecasas 1956), and it is here extended to about 20 by the inclusion of *Vernonia harlingii* H. Robinson. The non-glanduliferous anther appendages with ornate thickenings in their cell walls, which have been noted as a characteristic of the subtribe (Robinson 1992b), furnish a particularly sharp delimitation of the Mexican members of *Critoniopsis* from species of *Vernonanthura* H. Robinson (1992a) of the subtribe Vernoniae in that area. *Critoniopsis* proves to include all the species listed for *Vernonia* section *Eremosis* by Jones (1973) and Jones & Stutts (1981) along with two species not placed in the section by those authors, *Vernonia autumnalis* McVaugh and *V. tequilana* Jones & Stutts. Nevertheless, there are some southern species in this alliance from Bolivia and Brazil that lack obvious thickenings in the cells of their anther appendages. Thickenings prove to be weak or lacking in other members of the Piptocarphinae, such as *Pollalesta*. A few thin anther appendages with one gland at the base have been seen in a specimen of *Piptocarpha triflora* (Aubl.) Benn. ex Baker, but the gland is not on the appendage. Southern species of *Critoniopsis* having unthickened appendages can be distinguished from *Vernonanthura* by the deciduous inner involucre bracts and by the many small glands

or small hairs on the corolla. *Vernonanthura* also tends to have distinctive resin ducts filling the centers of the corolla lobes (Robinson 1992a) that are lacking in *Critoniopsis*.

The genus *Critoniopsis* and its species are summarized as follows.

Critoniopsis Schultz-Bip., Jahresber. Pollichia 20/21:430. 1863.

Type: *Critoniopsis lindenii* Schultz-Bip.

Turpinia Lexarza in La Llave & Lexarza, Nov. Veg. Descr. 1:24. 1824 (non H.B.K., 1807, nom. rej.; non Ventenat, 1807, nom. cons). Type: *T. tomentosa* Lexarza.

Monosis sect. *Eremosis* DC., Prodr. 5:77. 1836. Lectotype: *Monosis salicifolia* DC.

Tephrothamnus Schultz-Bip., Jahresber. Pollichia 20/21:431. 1863. Lectotype: *T. paradoxus* Schultz-Bip., chosen here.

Vernonia sect. *Critoniopsis* (Schultz-Bip.) Benth. & Hook.f., Gen. Pl. 2:230. 1873.

Eremosis (DC.) Gleason, Bull. New York Bot. Gard. 4:227. 1906.

Shrubs or trees to 13 m tall; stems and leaf undersurfaces densely pilosulous to tomentose, rarely glabrous (*C. glandulata*); stems of alternate-leaved species often deflected at nodes. Leaves simple, alternate or opposite, petiolate or rarely sessile (*C. harlingii*, *C. sagasteguii*); blades often coriaceous, broadly ovate to elliptical or obovate, base cuneate to slightly cordate, margins entire or remotely denticulate to serrulate distally, apices obtuse to acuminate, upper surface glabrous to tomentose, surfaces sometimes with stellate hairs; venation pinnate. Inflorescence terminal on leafy branches, usually pyramidally thyrsoid, with corymbose to subcymose branches. Heads homogamous discrete, sometimes crowded; involucre bracts slightly to strongly coriaceous, subimbricate to imbricate in 4–6 series, appressed, inner bracts easily deciduous, sometimes with strongly recurved basal margins, distal margins often split at maturity, rarely with a white marginal flange (*C. harlingii*); receptacle epaleaceous. Flo-

rets mostly 2–11 (15 or 16 in *C. pallida*, ca. 20 in *C. harlingii*); corollas regular, white to lavender, with distinct throat, lobes with numerous small glands outside, sometimes with short hairs; anther thecae without basal tails or with denticulate tails having thin-walled cells, apical anther appendage without glands, usually with ornate thickenings on cell walls (thin-walled in Brazilian and some Bolivian species); style with distinct broadened sclerified basal ring; style branches with blunt-tipped hairs. Achenes prismatic, usually with 8 veins, 3–8-ribbed, with many rounded idioblasts on surface usually in clusters, with or without setulae, raphids in walls subquadrate to short-oblong; carpodium shortly cylindrical to stopper-shaped, cells subquadrate in many series, with thickened cell walls; pappus biserial, inner series elongate, of many bristles with broadened tips, short outer series often weak or nearly lacking. Pollen grains tricolporate, spinulose, type A.

Chromosome numbers are known only from Mexican members of the genus: $N = 17$, *C. autumnalis* (Jones 1979); $N = 18$, *C. foliosa* (Jones 1973 as *V. steetzii*); $N = 17$ or 18, *C. leiocarpa* (Jones 1973); $N = 19$, *V. obtusa* (Jones 1973); $N = 37 \pm 1$, *C. salicifolia* (Jones 1973); $N = 36$, *C. tomentosa* (Jones 1973 as *C. paniculata*); $N = 36$ –39, *C. uniflora* (Jones 1974).

Previous combinations in *Critoniopsis* include the type species (Schultz-Bip, 1863), the species treated by Cuatrecasas (1956) that were transferred by Robinson (1980), two Venezuelan species transferred by Badillo (1983), and two Andean species transferred by Robinson (1990b). Two additional species were named from Venezuela by Badillo (1989). Species that have been placed in *Vernonia* sect. *Critoniopsis* that are here excluded from the genus include four in Baker (1873) and three in Cuatrecasas (1956). The Brazilian species included by Baker, but excluded here, are *Vernonia puberula* Less., *V. diffusa* Less. and *V. discolor* Less., which belong to the genus *Vernonanthura* H. Rob-

inson (1992a), and *V. serrata* Less., which belongs to *Dasyanthina* H. Robinson. The three species included by Cuatrecasas, but excluded here, are *Vernonia crassilanata* Cuatr. of Colombia and Ecuador and *V. trichotoma* Gleason of Colombia, which are members of *Joseanthus* H. Robinson (1989), and *V. vargasii* Cuatr. of Peru, which is apparently a synonym of *Vernonanthura patens* (H.B.K.) H. Robinson (1992a). The species concepts of Jones (1973) and Jones & Stutts (1981) are accepted here.

The 76 species presently accepted in *Critoniopsis* are as follows:

Critoniopsis angusta
(Gleason) H. Robinson,
comb. nov.

Eremosis angusta Gleason, N. Amer. Fl. 33: 98. 1922.

Vernonia angusta (Gleason) Standl., Publ. Field. Mus. Nat. Hist., Bot. Ser. 11:276. 1936.

Distribution. — Guatemala.

Critoniopsis autumnalis
(McVaugh) H. Robinson,
comb. nov.

Vernonia autumnalis McVaugh, Contr. Univ. Michigan Herb. 9(4):477. 1972.

Distribution. — Mexico.

Unlike other members of the genus, the species is a short-lived perennial herb. It was excluded from the section *Eremosis* by Jones (1973), but the anther appendages lack glands and have thickenings on the cell walls as in other members of *Critoniopsis*.

Critoniopsis baadii
(McVaugh) H. Robinson,
comb. nov.

Vernonia salicifolia (DC.) Schultz-Bip. var. *baadii* McVaugh, Contr. Univ. Michigan Herb. 9:484. 1972.

Vernonia baadii (McVaugh) S. Jones, Brittonia 25:113. 1973.

Distribution. — Mexico.

Critoniopsis barbinervis
(Schultz-Bip.) H. Robinson,
comb. nov.

Vernonia barbinervis Schultz-Bip. in Seem., Bot. Voy. Herald 297. 1856.

Eremosis barbinervis (Schultz-Bip.) Gleason, Bull. New York Bot. Gard. 4:232. 1906.

Distribution. — Mexico.

Critoniopsis bitriflora
(Cuatr.) H. Robinson,
Phytologia 46:439. 1980.

Vernonia bitriflora Cuatr., Bot. Jahrb. Syst. 77:64. 1956.

Distribution. — Colombia.

Critoniopsis bogotana
(Cuatr.) H. Robinson,
Phytologia 46:439. 1980.

Vernonia bogotana Cuatr., Bot. Jahrb. Syst. 77:65. 1956.

Vernonia calerana Cuatr., Not. Syst. Paris 15(2):238. 1956.

Distribution. — Colombia.

The species is the most common of the genus in the area of Depto. Cundinamarca, but reports from outside of that area are not accepted here.

Critoniopsis boliviana
(Britton) H. Robinson,
comb. nov.

Vernonia boliviana Britton, Bull. Torrey Bot. Club. 18:332. 1891.

Vernonia paucisquamata Rusby, Bull. New York Bot. Gard. 4:376. 1907.

Distribution. — Ecuador, Bolivia.

Many specimens are known from Bolivia,

and the species was recently collected in Ecuador: Zamora-Chinchipec: Nangaritza Canton Ridge crest of Cordillera del Cóndor, above Pachicutza, on the disputed Peru-Ecuador border, Neill & Palacios 9523 (MO, QCNE, US).

Critoniopsis brachystephana
(Cuatr.) H. Robinson,
Phytologia 46:439. 1980.

Vernonia brachystephana Cuatr., Bot. Jahrb. Syst. 77:66. 1956.

Distribution.—Colombia.

The species seems to be distinguished from the closely related *C. lindenii* only by the lack of distinct, large squamae in the outer pappus.

Critoniopsis cajamarcensis
(H. Robinson) H. Robinson,
comb. nov.

Vernonia cajamarcensis H. Robinson, Phytologia 53:393. 1983.

Distribution.—Peru, Bolivia.

Critoniopsis cotopaxensis H. Robinson,
sp. nov.
(Fig. 1)

Plantae arborescentes ad 13 m altae; caules subhexagonales dense patentiter rufo-tomentosi. Folia alterna vel subopposita, petiolis 2–4 cm longis dense rufo-hirtellis; laminae subcoriaceae ovatae vel oblongo-ovatae 13–22 cm longae 6.5–10.0 cm latae base obtusae vel breviter acutae margine integrae apice leniter breviter anguste acuminatae supra planae vel vix rugulosae parce pilosulae glabrescentes subtus in nervis et nervulis dense prominulae sordide tomentellae et parce glanduliferae, pilis in nervis primariis rufo-hirsutis, pilis in nervis secundariis et nervulis pallidis base stellatae armatis, pilis in areolis albis minute stellatis, nervis secundariis patentiter pinnatis. Inflo-

rescentiae laxae pyramidaliter thyrsoideae in ramis primariis et ramulis alternis vel suboppositis late patentibus rufo-hirsutae vel patentiter tomentosae, pedunculis in fasciculis plerumque 2–3 ca. 0–3 mm longis. Capitula submatura ca. 7 mm alta 4–5 mm lata; bractae involucri ca. 25 appresse imbricatae ca. 3–4-seriatae ovatae vel anguste oblongae 1.5–4.5 mm longae 1.0–1.4 mm latae apice breviter acutae vel obtusae extus distincte vel in partibus superioribus leniter puberulae. Flores 8 vel 9; corollae albae? ca. 4.2 mm longae, tubis immaturis ca. 1.3 mm longis, faucibus ca. 0.5 mm longis, lobis ca. 2.5 mm longis extus ubique minute glanduliferis; thecae antherarum ca. 1.7 mm longae base non caudatae; appendices antherarum ca. 0.4 mm longae, cellulis distincte reticulate ornatis; pili stylorum apice rotundati. Achenia immatura ca. 1 mm longa glabra; setae pappi interiores ca. 4.2 mm longae distaliter sensim distincte latiores; setae exteriores immaturae indistincte. Grana pollinis in diametro ca. 40 μ m tri-colporata spinulosa.

Type: ECUADOR: Cotopaxi: Carretera Latacunga–Pilaló–Quevado, 5–15 km al este de Pilaló, 00°55'S, 79°01'W, 2700–3350 m, bosque muy húmedo Montano Bajo, bosque disturbado, árbol de 13 m, capítulos color crema blanco, 22 May 1988, Cerón, Neill & Palacios 3804 (holotype US; isotype MO).

Critoniopsis cotopaxensis is similar to *C. palaciosii*, described below, in the size and shape of its leaves and the stellate or basally armed hairs of the leaf undersurface, but the leaves of the latter seem rigorously opposite with secondary veins more ascending, the heads have about 6 florets, and the achenes have a pubescence of uniseriate setulae. The present species is similar to *C. suaveolens* in its general aspect and 8 or 9 florets in the heads, but the latter has smaller leaves with a rugose upper surface, contorted simple hairs on the lower surface, and a denser inflorescence.



Critoniopsis cotopaxensis H. Robinson
Holotype:

ECUADOR

ASTERACEAE

Critoniopsis

Prov. COTOPAXI:
Carretera Latacunga-Pilaló-Quevedo.
5-15 km al este de Pilaló.
Bosque muy húmedo Montano Bajo.
Bosque disturbado.
00°55'S 79°01'W 2700-3350 m

Arbol de 13 m; capitulos color
crema blanco.

Carlos E. Cerón, 22 mayo 1938
D. Neill, W. Palacios 3804
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

UNITED STATES

3145460

NATIONAL HERBARIUM

Fig. 1. Holotype of *Critoniopsis cotopaxensis* H. Robinson, Cerón, Neill & Palacios 3804 (US).

Critoniopsis cuatrecasatii H. Robinson,
Phytologia 46:439. 1980.

Distribution. — Colombia.

Critoniopsis dorrii H. Robinson, sp. nov.
(Fig. 2)

Plantae arborescentes 2–6 m altae; caules brunnescentes superne dense appresse tomentelli inferne subglabrescentes. Folia opposita vel interdum alterna, petiolis 6–12 mm longis; laminae coriaceae ellipticae plerumque 4–8 cm longae 1.8–3.8 cm latae base et apice breviter acutae margine integras supra planas glabras subtus in nervulis minute reticulate distincte prominulae dense pallide tomentellae, pilis congestis minute stellatis, nervis secundariis utrinque ca. 8 vel 9. Inflorescentiae in ramis foliatis terminales laxe pyramidaliter thyrsoidae apice et in ramis rotundate corymbosae laxae, pedunculis 1–8 mm longis dense appresse stellate tomentellis. Capitula 10–12 mm alta 3–4 mm lata; bractee involucri ca. 40 appresse imbricatae ca. 5-seriatae late ovatae vel lineari-lanceolatae 1–5 mm longae 1.0–1.3 mm latae apice breviter acutae extus parce appresse puberulae. Flores 9–12 in capitulo; corollae albae? ca. 7 mm longae parce minute glanduliferae, tubis infundibularibus ca. 5 mm longis, faucibus ca. 1 mm longis, lobis ca. 2 mm longis; thecae antherarum ca. 2 mm longae base vix vel non caudatae; appendices antherarum 0.45–0.50 mm longae, parietibus cellularum distincte reticulate ornatis; pili stylorum apice rotundati. Achenia ca. 3.8 mm longa glabra vel perpaucis minute setulifera; setae pappi interiores ca. 5.5 mm longae distaliter sensim distincte latiores. Grana pollinis in diametro ca. 40 μ m tricolorata spinulosa.

Type: ECUADOR: Azuay: Cuenca–Soldados road (following N bank of Río Yanuncay), 19–20 km W of San Joaquin (2°55'S, 79°5'W), small tree 2–3 m high, 22 Jun 1989, Dorr & Valdespino 6404 (holotype US; isotypes F, NY). Paratype: ECUADOR: Azuay: mountains above Sayausid, 3000–3200 m, tree 5–6 m high, corolla

white, 18 Mar 1974, Harling & Andersson 12585 (GB).

Critoniopsis dorrii resembles *C. sodiroi* (*C. pichinchensis*) of north-central Ecuador in habit, especially with the mostly opposite leaves. There is also a resemblance to *C. pycnantha* of southernmost Ecuador and northern Peru. The new species differs from the latter two by the looser inflorescence, the larger heads with more florets, and by the strongly prominulous dense reticulation of veinlets on the lower leaf surface. Leaves on the type series are strictly opposite, but those of the paratype are alternate on some branches.

Critoniopsis duncanii
(S. Jones) H. Robinson,
comb. nov.

Vernonia duncanii S. Jones, Brittonia 25:
108. 1973.

Distribution. — Mexico.

Critoniopsis elbertiana
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia elbertiana Cuatr., Bot. Jahrb. Syst.
77:68. 1956.

Distribution. — Columbia, Ecuador.

The species is one of two noted by Cuatrecasas (1956) for the contracted bases and recurved “auriculate” basal margins of the median and inner involucre bracts. The type and one more recent collection (King 6199, US) are from Depto. Putumayo in southern Colombia. Two other collections have been seen from adjacent Prov. Napo in Ecuador (Palacios 5360, 6416, MO, US). All specimens are from the eastern escarpment of the Andes.

Critoniopsis floribunda
(H.B.K.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia floribunda H.B.K., Nov. Gen. et
Sp., ed. fol. 4:30. 1818.

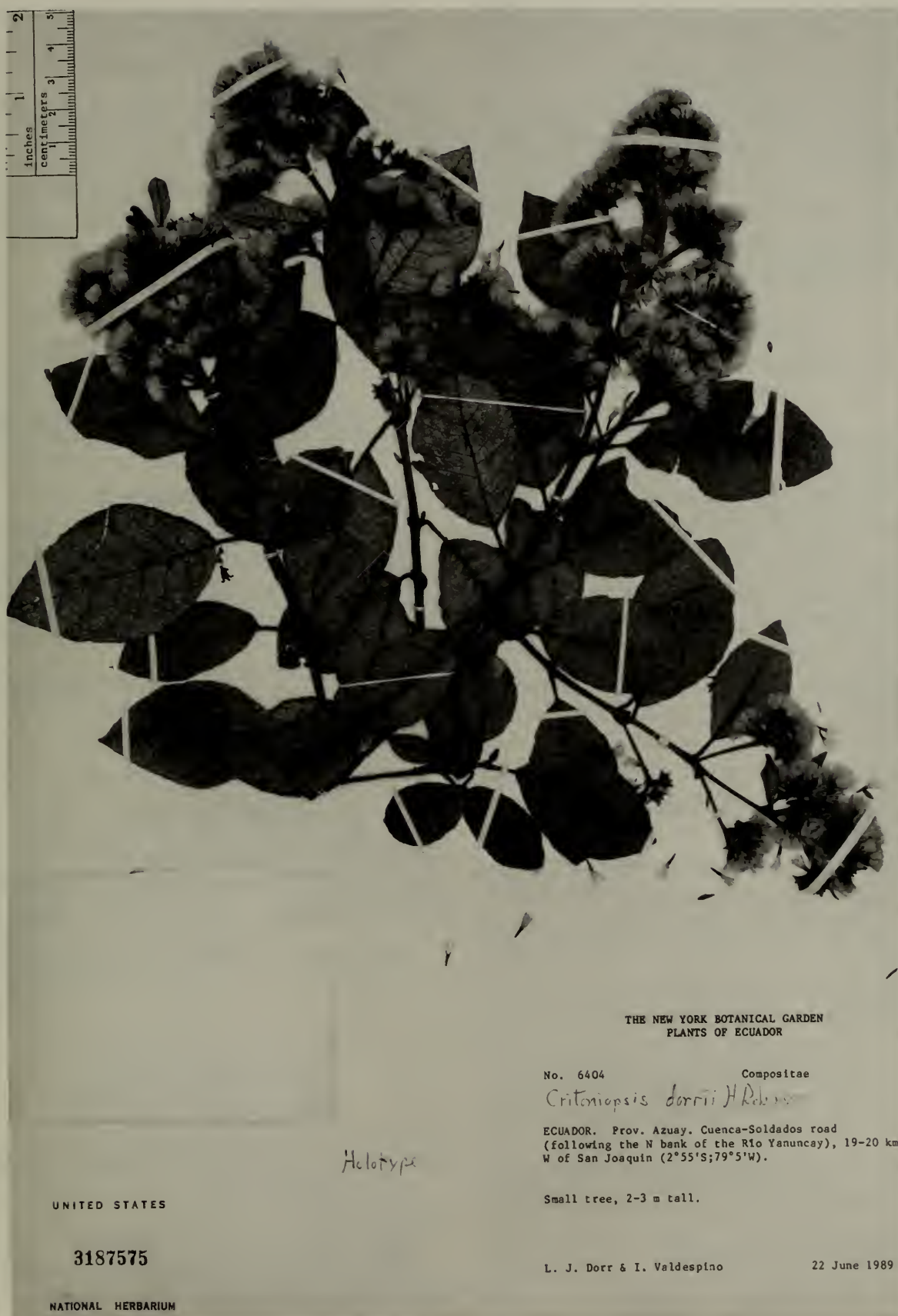


Fig. 2. Holotype of *Critoniopsis dorrii* H. Robinson, Dorr & Valdespino 6404 (US).

Vernonia affinis H.B.K., Nov, Gen. et Sp., ed. fol. 4:30. 1818.

Distribution.—Ecuador, Peru.

The type specimen has been ascribed, with some question, to Peru. Recent collections identified as the species are from Prov. Loja in southernmost Ecuador (Øllgaard, Madsen & Christensen 74596, AAU, UCQ, US; Dalessandro 657, MO, US).

Critoniopsis foliosa
(Benth.) H. Robinson,
comb. nov.

Monosis foliosa Benth., Pl. Hartw. 19. 1839.

Vernonia steetzii Schultz-Bip. in Seem, Bot. Voy. Herald 297. 1856.

Vernonia steetzii var. *callilepis* Schultz-Bip. in Seem., Bot. Voy. Herald 297. 1856.

Vernonia foliosa (Benth.) Schultz-Bip., Jahresber. Pollichia 18/19:161. 1891, non *V. foliosa* Gardn. 1846.

Eremosis foliosa (Benth.) Gleason, Bull. New York Bot. Gard. 4:228. 1906.

Eremosis steetzii (Schultz-Bip.) Gleason, Bull. New York Bot. Gard. 4:230. 1906.

Vernonia mucronata Blake, Contr. Gray Herb. 52:19. 1917.

Eremosis callilepis (Schultz-Bip.) Gleason, N. Amer. Fl. 33:98. 1922.

Vernonia aristifera Blake, Contr. U.S. Natl. Herb. 23:1415. 1926.

Distribution.—Mexico.

Critoniopsis franciscana
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia franciscana Cuatr., Bot. Jahrb. Syst. 77:69. 1956.

Distribution.—Colombia.

Critoniopsis glandulata
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia glandulata Cuatr., Bot. Jahrb. Syst. 77:69. 1956.

Distribution.—Colombia, Venezuela.

The species is distinctive in the heads that are 12 mm high when mature and in the large coriaceous leaf blades, with rounded apices, glabrous undersurfaces, and the short basal decurrences with recurved margins. The basal decurrence of the blade is not as abruptly delimited as that of *C. killipii*.

Critoniopsis harlingii
(H. Robinson) H. Robinson,
comb. nov.

Vernonia harlingii H. Robinson, Phytologia 44:66. 1979.

Distribution.—Ecuador.

The large, sessile, opposite leaves, the broad, whitish, dissected margins of the involucre bracts, and the heads with about 20 florets are distinctive.

Critoniopsis heydeana
(Coult.) H. Robinson,
comb. nov.

Vernonia heydeana Coult., Bot. Gaz. (Crawfordsville) 20:42. 1895.

Eremosis heydeana (Coult.) Gleason, Bull. New York Bot. Gard. 4:234. 1906.

Distribution.—Mexico, Guatemala.

Critoniopsis huairacajana
(Hieron.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia huairacajana Hieron., Bot. Jahrb. Syst. 19:43. 1894.

Distribution.—Ecuador, Peru.

The species was described from Prov. Azuay in southern Ecuador and has been collected in nearby Prov. Cañar (Prieto P-76, NY, US; King & Almeda 7743, US). A specimen from Depto. Cajamarca in Peru is also identified as this species (Becker & Terrones 2283, US).

Critoniopsis huilensis
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia huilensis Cuatr., Bot. Jahrb. Syst.
77:71. 1956.

Distribution.—Colombia.

Critoniopsis jalcana
(Cuatr.) H. Robinson,
comb. nov.

Vernonia jalcana Cuatr., Ann. Missouri Bot.
Gard. 52:312. 1965.

Distribution.—Peru.

Critoniopsis jelskii
(Hieron.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia jelskii Hieron., Bot. Jahrb. Syst.
36:459. 1905.

Distribution.—Peru.

Critoniopsis jubifera
(Rusby) H. Robinson,
comb. nov.

Vernonia jubifera Rusby, Mem. Torrey Bot.
Club 6:53. 1896.

Vernonia conwayi Rusby, Bull. New York
Bot. Gard. 8:125. 1912.

Distribution.—Bolivia.

Critoniopsis killipii
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia killipii Cuatr., Bot. Jahrb. Syst.
77:71. 1956.

Vernonia bogotana var. *santanderensis*
Cuatr., Bot. Jahrb. Syst. 77:66. 1956.

Distribution.—Colombia, Venezuela
(Tachira).

The species is easily distinguished by the base of the leaf blade that has a strongly recurved margin and an abrupt decurrence for about 1 cm on the petiole. Specimens in

addition to the type include one from Depto. Santander, Colombia (Killip & Smith 18332, US) and one from Edo. Tachira in Venezuela (Steyermark & Dunsterville 98656, US) that have been annotated as *Vernonia bogotana* var. *santanderensis* Cuatr. by Keeley.

Critoniopsis leiocarpa
(DC.) H. Robinson,
comb. nov.

Vernonia leiocarpa DC., Prodr. 5:34. 1836.
Cacalia leiocarpa (DC.) Kuntze, Rev. Gen.
Pl. 2:970. 1891.

Eremosis leiocarpa (DC.) Gleason, Bull.
New York Bot. Gard. 4:232. 1906.

Eremosis melanocarpa Gleason, Bull. New
York Bot. Gard. 4:232. 1906.

Distribution.—Mexico, Guatemala, Belize, El Salvador, Honduras, Nicaragua.

Critoniopsis lewisii H. Robinson,
sp. nov.

Plantae fruticosae et subarborescentes vel leniter scandentes 3–4 m altae, ramulis numerosis; caules atro-brunnescentes subteretes irregulariter striati dense minute puberuli. Folia alterna, petiolis 0.4–0.7 mm longis; laminae subcoriaceae ovatae vel anguste ovatae plerumque 4.0–6.5 cm longae 1.3–2.2 cm latae base breviter acutae margine perminute remote denticulatae apice acutae supra glanduliferae cetera glabrae in nervulis minime prominulis subtus dense glandulo-punctatae subglabrae in nervis majoribus appresse puberulae in nervulis non prominulis dense brunnescentiter reticulatae, nervis secundariis pinnatis utrinque 7 vel 8 in angulis 50–75° patentibus. Inflorescentiae late rotundate corymbosae in ramis dense corymbosae in glomerulis capitulorum subsessiliorum terminatis, pedunculis 0–2 mm longis dense breviter sordide puberulis vel subvelutinis. Capitula ca. 11 mm altae; bractae involucri ca. 20 appresse imbricatae ca. 4–seriatae ovatae vel anguste

oblongae 1.5–7.0 mm longae 1.0–2.2 mm latae apice acutae extus sparse appresse pallide puberulis. Flores 3–5; corollae purpureae ca. 7 mm longae, tubis 3.5–4.0 mm longis, faucibus ca. 0.8 mm longis extus pauce glanduliferis, lobis ca. 3 mm longis ca. 0.5 mm latis extus glanduliferis distaliter densiores apice pauce pilulosis, pilis leniter T-formibus; thecae antherarum ca. 3 mm longae, caudis basilaribus 0.8 mm longis retrorse denticulatis; appendices antherarum ca. 0.55 mm longae 0.27 mm latae, cellulis distincte leniter ornate annulatae; pili stylorum apice rotundati. Achenia ca. 3 mm longa 10-costata in sulcis glandulifera cetera glabra; setae papillae pluriseriatae plerumque ca. 7 mm longae inferne scabridulae distaliter laeviores vix latiores, setae pappi breviores pauces irregulares. Grana pollinis in diametro ca. 35 μ m tricolporata spinulosa.

Type: BOLIVIA: La Paz: Prov. Inquisivi: "Quebrada Jancha Kaihua," along a ravine joining Río Ocsalla ca. 3 km down river from Laguna Huara Huarani, 10 km N of Choquetanga, along upper edge of ravine cloud forest, *Clethra*, *Hesperomeles*, *Weinmannia*, *Saracha*, *Berberis*, *Gynoxys*, *Myrica* are all common, 16°45'S, 67°17'W, 3400–3600 m, vine over small trees, inflorescence white, 3 Sep 1991, Marko Lewis 39696 (holotype US; isotypes LPB, MO). Paratype: BOLIVIA: La Paz: Prov. Inquisivi: "Chachacomani," slope SW of the Río Ocsalla, a few hundred meters above river and 3 km SE of its mouth 12 km NE of Choquetanga, 16°17'S, 67°17'W, 3300 m, forest edges, large shrub or small tree 3–4 m high, phyllaries deep black-red-purple, flowers white-purple, 18 Apr 1991, Marko Lewis 38834 (LPB, MO, US).

The new species has the aspect of *Critoniopsis quinqueflora* of southeastern Brazil and *C. weberbaueri* of northern Peru. The Brazilian species differs most obviously by having a differentiated, short, scale-like outer pappus series and a distinctly setuliferous achene. The Peruvian species is most close-

ly related, but it differs by the fewer branches, the generally larger leaves, the glands on the leaf undersurfaces that are very dense and almost touching, the more numerous and more prominent secondary veins, the more ascending branches of the inflorescence, and the denser and longer pubescence of the involucre.

Critoniopsis lindenii Schultz-Bip.,
Jahresber. Pollichia 20/21:431. 1863.

Vernonia lindenii (Schultz-Bip.) Cuatr., Bot.
Jahrb. Syst. 57:72. 1956.

Distribution. — Colombia.

Specimens have been determined recently from Depto. Antioquia (Uribe Uribe 2071, US; Escobar & Velásquez 7534, US; Zarucchi, Betancur & Roldán 5273, MO, US) and Depto. Quindio (Gentry, Velez & Carvajal 65348, MO, US).

Critoniopsis littoralis
(Brandg.) H. Robinson,
comb. nov.

Vernonia littoralis Brandg., Erythea 7:3.
1899.

Eremosis littoralis (Brandg.) Gleason, North.
Amer. Fl. 33:100. 1922.

Distribution. — Mexico.

Critoniopsis macphersonii
(S. Jones & Stutts) H. Robinson,
comb. nov.

Vernonia macphersonii S. Jones & Stutts,
Brittonia 33:546. 1981.

Distribution. — Mexico.

Critoniopsis macvaughii
(S. Jones) H. Robinson,
comb. nov.

Vernonia macvaughii S. Jones, Brittonia 25:
105. 1973.

Distribution. — Mexico.

Critoniopsis magdalenae
(Barroso) H. Robinson,
comb. nov.

Vernonia magdalenae Barroso, Arq. Jard.
Bot. Rio Janeiro 13:12. 1954.

Distribution. — Brazil.

Critoniopsis meridensis
(Badillo) Badillo,
Ernstia 16:16. 1983.

Vernonia meridensis Badillo, Rev. Fac.
Agron. Univ. Central (Maracay). 9:87.
1976.

Distribution. — Venezuela.

Critoniopsis mucida
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia mucida Cuatr., Bot. Jahrb. Syst.
77:72. 1956.

Distribution. — Colombia.

Critoniopsis occidentalis
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia occidentalis Cuatr., Bot. Jahrb.
Syst. 77:73. 1956.

Distribution. — Colombia, Ecuador.

The species was originally described from Depto. Valle in Colombia, but specimens have been seen recently from Depto. Nariño (Gentry, Benavides & Keating 60522, MO, US; Beltrán 44, US) and farther south in Ecuador in Prov. Carchi (Hoover et al. 2556, MO, US; Palacios & Rubio 7271), Prov. Napo (Palacios 5369, MO, US), and Prov. Pichincha (Jaramillo et al. 8055, 8068, 8089, MO, US; Zak & Jaramillo 2519, MO, US; Zak 1151, 1239, 1251 US).

Critoniopsis oolepis (Blake) H. Robinson,
comb. nov.

Vernonia oolepis Blake, Contr. Gray Herb.
52:20. 1917.

Eremosis oolepis (Blake) Gleason, North.
Amer. Fl. 33:97. 1922.

Distribution. — Mexico.

Critoniopsis obtusa (Gleason) H. Robinson,
comb. nov.

Eremosis obtusa Gleason, N. Amer. Fl. 33:
99. 1922.

Vernonia obtusa (Gleason) Blake, Contr.
U.S. Natl. Herb. 23:1415. 1926.

Distribution. — Mexico.

Critoniopsis ovata (Gleason) H. Robinson,
comb. nov.

Eremosis ovata Gleason, Bull. Torrey Bot.
Club 40:331. 1913, non *Vernonia ovata*
Less., 1829.

Vernonia gleasonii Blake, Contr. Gray Herb.
52:17. 1917, non *V. gleasonii* Ekman,
1914.

Vernonia durangensis Blake, Contr. U.S.
Natl. Herb. 22:587. 1924.

Distribution. — Mexico.

Critoniopsis palaciosii H. Robinson,
sp. nov.
(Fig. 3)

Plantae dendroideae ad 10 m altae; caules atro-brunnescentes dense brunneo-velutini. Folia opposita, petiolis 2–3 cm longis; laminae coriaceae ovatae 13–18 cm longae 4–8 cm latae base obtusae margine integrae apice breviter acutae supra rugulosae glandulo-punctatae caetera glabrae in nervulis non prominulis subtus in nervulis minute reticulate prominulae dense sordide tomentellae, pilis contortis base stellate armatis, nervis secundariis utrinque ca. 13 inferne patentiores. Inflorescentiae pyramidaliter thyrsoideae in ramis primariis oppositae dense pallide tomentosae vel sublanatae, ramulis dense breviter sordide velutinis in glomerulis capitulorum subsessiliorum terminatis. Capitula 8–9 mm alta; bractee involucri ca. 22 appresse imbricatae ca.



Fig. 3. Holotype of *Critoniopsis palaciosii* H. Robinson, *Palacios & Iguago 4867* (US).

4-seriatae ovatae vel anguste oblongae 1.5–6.0 mm longae et 1.0–1.5 mm latae apice obtusae extus superne dense puberulae. Flores ca. 6; corollae albae? ca. 6.5 mm longae, tubis ca. 2 mm longis, faucibus 1.5 mm longis, lobis ca. 2.5 mm longis extus ubique minute glanduliferis; thecae antherarum ca. 1.5 mm longae base breviter caudatae; appendices antherarum ca. 0.4 mm longae, cellulis distincte ornate annulatae; pili stylorum apice rotundati. Achenia ca. 2.2 mm longa pilifera, pilis uniseriatis; setae pappi ca. 4.5 mm longae superne sensim distincte lateriores; setae exteriores perbreves. Grana pollinis in diametro 35–40 μm tricolporata spinulosa.

Type: ECUADOR: Imbabura: Cantón Cotacachi: carretera Cotacachi–Apuela, sitio Tabla Chuap, a 1 km de Hacienda La Providencia, 78°25'W, 00°25'N, 3100 m, bosque primario, arbol de 10 m altura, hojas coriáceas con el envés parduzco, capítulos verdes, lígulas blancas, 4 Apr 1990, W. Palacios & C. Iguago 4867 (holotype US, isotype MO).

Critoniopsis palaciosii is notable for the opposite leaves with large, ovate blades and the dense and prominulous veinlets on the lower surface. The only other species with opposite leaves with large blades is *C. harlingii* of southern Ecuador, but the latter has sessile leaves, distinctive dissected whitish margins on the involucre bracts, and about 20 florets in its heads.

Critoniopsis pallens
(Schultz-Bip.) H. Robinson,
comb. nov.

Vernonia pallens Schultz-Bip., Jahresber. Pollichia 18/19:161. 1861.

Eremosis pallens (Schultz-Bip.) Gleason, Bull. New York Bot. Gard. 4:228. 1906.

Vernonia michoacana McVaugh, Contr. Univ. Michigan Herb. 9:482. 1972.

Distribution. — Mexico.

Critoniopsis pallida
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia pallida Cuatr., Bot. Jahrb. Syst. 77:74. 1956.

Distribution. — Colombia.

Critoniopsis paradoxa
(Schultz-Bip.) Badillo,
Ernstia 16:16. 1983.

Tephrothamnus paradoxus Schultz-Bip., Jahresber. Pollichia 20/21:432. 1863.

Piptocarpha venezuelensis Badillo, Bol. Soc. Venez. Cienc. Nat. 10:280. 1946.

Piptocarpha paradoxa (Schultz-Bip.) Aris-teguieta, Fl. Venezuela, Compositae 10(1): 54. 1964.

Distribution. — Venezuela.

Critoniopsis paucartambensis
(Dillon) H. Robinson,
comb. nov.

Vernonia paucartambensis Dillon, Brittonia 36:336. 1984.

Distribution. — Peru.

The species was described from the Depto. Cuzco, and an additional specimen has been seen from Depto. Puno (Boeke & Boeke 3076, NY, US).

Critoniopsis pendula
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia pendula Cuatr., Bot. Jahrb. Syst. 77:57. 1956.

Distribution. — Columbia.

Critoniopsis peruviana
(Cuatr.) H. Robinson,
comb. nov.

Vernonia peruviana Cuatr., Bot. Jahrb. Syst. 77:75. 1956.

Distribution. — Peru.

Critoniopsis popayanensis
(Cuatr.) H. Robinson,
Phytologia 46:440. 1980.

Vernonia popayanensis Cuatr., Bot. Jahrb.
Syst. 77:77. 1956.

Distribution.—Colombia.

The leaf blades of the species have a slightly recurved basal margin and a basal decurrence reminiscent of *C. killipii*, but the decurrence is in no way as strong or abruptly limited. The type specimen was from Depto. Cauca in Colombia, and there are two recent collections from Depto. Antioquia (Croat 69888, MO, US; Betancur, Roldán & Castaño 1133, HUA, US).

Critoniopsis pugana
(S. Jones & Stutts) H. Robinson,
comb. nov.

Vernonia pugana S. Jones & Stutts, Brittonia 33:544. 1981.

Distribution.—Mexico.

Critoniopsis pycnantha
(Benth.) H. Robinson,
Phytologia 46:441. 1980.

Vernonia pycnantha Benth., Pl. Hartw. 134.
1844.

Tephrothamnus? pycnanthus (Benth.)
Schultz-Bip., Jahresber. Pollichia 20/21:
433. 1863.

Distribution.—Ecuador.

The Hartweg type specimen was from "montibus Paccha" which is presumed here to be in Depto. Ancash, Peru rather than Colombia or Ecuador as sometimes stated. Material matching the type photograph has been seen from Prov. Loja in southernmost Ecuador (Øllgaard, Laegaard, Thomsen, Korning & Illum 58006, AAU, US; Madsen 75524, AAU, US). Specimens identified as the species from Colombia, central Ecuador, and Bolivia are considered here to belong to various other species, some of which may be unnamed.

Critoniopsis quillonensis H. Robinson,
sp. nov.

Plantae arborescentes ad 7 m altae; caules teretes dense granulate flavo-tomentelli, pilis globuliformis subsessilis sparse per breviter spinulosi. Folia opposita vel subopposita, petiolis 0.2–0.7 cm longis; laminae vix coriaceae anguste ovatae vel ellipticae 4–10 cm longae 0.8–3.0 cm latae base anguste acutae vel acutae margine subserrulatae apice anguste acutae vel acuminatae supra glabrae in nervulis minute pallide prominulae subtus in nervulis reticulatae distincte prominulae dense stellulate tomentellae, pilis breviter stellatis breviter stipitatis, nervis secundariis utrinque 8–11 in angulis ca. 45° patentibus. Inflorescentiae terminales late pyramidaliter paniculatae, ramulis corymbiformis, pedunculis 0–2 mm longis dense flave granulo-tomentellis. Capitula ca. 10 mm alta; bractee involucri ca. 25 breviter suborbiculares vel oblongo-ellipticae 1–4 mm longae 1.0–1.5 mm latae apice rotundatae vel breviter obtusae extus glabrae. Flores ca. 9; corollae albae? ca. 6.5 mm longae extus in faucibus et in apicis lobarum glanduliferae, tubis ca. 2.5 mm longis, faucibus 0.7 mm longis, lobis ca. 3 mm longis base ca. 0.5 mm latis; thecae antherarum ca. 1.2 mm longae base vix appendiculatae; appendices antherarum ca. 0.4 mm longae; base stylorum abrupte nodulosi, pilis stylorum apice rotundatae. Achenia ca. 3 mm longa glabra 6 vel 7-costata; setae pappi albae ca. 4 mm longae distaliter sensim distincte latiores; squamae exteriores ca. 0.5 mm longae. Grana pollinis in diametro ca. 45 μ m.

Type: PERU: Cajamarca: Prov. San Miguel: Cerro Quillón (Agua Blanca), 3150 m, 5 Jul 1986, Mostacero, Alvitez, Leiva, Mejia & Peláez 1286 (holotype, US; isotypes, F, MO, NY).

The species is known only from the type collection. Data on the label indicates a roadside and "Arbol de hasta 7 m de alto con capítulos blancos."

The species is another with opposite to

subopposite leaves. Such forms are more common in Colombia and Ecuador, and only the sessile-leaved *C. sagasteguii* has previously been described with opposite leaves from Peru. The new species is distinctive in its narrow, almost lanceolate, leaf blades with narrowly cuneate bases and acute apices, and by the subserrulate margins of the leaf blades.

Critoniopsis quinqueflora
(Less.) H. Robinson,
comb. nov.

Vernonia quinqueflora Less., *Linnaea* 6:656.
1831.

Distribution. — Brazil.

Critoniopsis sagasteguii
(Dillon) H. Robinson,
comb. nov.

Vernonia sagasteguii Dillon, *Brittonia* 36:
333. 1984.

Distribution. — Peru.

Dillon (1984) suggests that the species fits naturally within the group of *Vernonia*, now placed in *Joseanthus*, that have opposite leaves, spreading inner involucre bracts, and cylindrical basal corolla tubes ending abruptly at the bases of the deeply cut lobes. The original description and the one corolla illustrated in the head indicate that the corolla is typical of *Critoniopsis*, and that the lobes are not separate to the bases of the anther filaments.

Critoniopsis salicifolia
(DC.) H. Robinson,
comb. nov.

Monosis salicifolia DC., *Prodr.* 5:77. 1836.
Cacalia salicifolia (DC.) Kuntze, *Rev. Gen.*
Pl. 2:971. 1891.

Eremosis salicifolia (DC.) Gleason, *Bull.*
New York Bot. Gard. 4:321. 1906.

Eremosis leiophylla Gleason, *Bull. New*
York Bot. Gard. 4:231. 1906.

Vernonia leiophylla (Gleason) Blake, *Contr.*
Gray Herb. 52:18. 1917.

Distribution. — Mexico.

Critoniopsis sevilana
(Cuatr.) H. Robinson,
Phytologia 46:441. 1980.

Vernonia sevilana Cuatr., *Bot. Jahrb. Syst.*
77:78. 1956.

Distribution. — Ecuador.

The species was originally described from Prov. Azuay in Ecuador and two collections have been seen from Prov. Loja (Dodson & Thein 1343, US; Madsen 85459, AAU, US).

Critoniopsis shannonii
(Coult.) H. Robinson,
comb. nov.

Vernonia shannonii Coult., *Bot. Gaz.*
(Crawfordsville) 20:42. 1895.

Eremosis shannonii (Coult.) Gleason, *Bull.*
New York Bot. Gard. 4:234. 1906.

Distribution. — Guatemala.

Critoniopsis sodiroi
(Hieron.) H. Robinson,
Phytologia 69:105. 1990.

Piptocarpha sodiroi Hieron. ex Sodiro, *Bot.*
Jahrb. Syst. 29:2. 1900.

Vernonia pichinchensis Cuatr., *Bot. Jahrb.*
Syst. 77:76. 1956.

Critoniopsis pichinchensis (Cuatr.) H. Rob-
inson, *Phytologia* 46:440. 1980.

Distribution. — Ecuador.

The opposite-leaved Ecuadorian species is known mostly from Prov. Pichincha, but has also been collected in Prov. Bolívar (Asplund 8223, US; Zak & Jaramillo 2578, MO, US), Prov. Chimborazo (Zak & Jaramillo 2863, 3661, MO, US), Prov. Cotopaxi (Holm-Nielsen & Andrade 18510, AAU, US; Neill, Palacios & Cerón 8426, MO, US), and Prov. Imbabura (Moran, Vaca, Vallejo & Paisano 38, MO, US).

Critoniopsis standleyi
(Blake) H. Robinson,
comb. nov.

Vernonia standleyi Blake, J. Wash. Acad.
Sci. 13:143. 1923.

Distribution.—Guatemala, El Salvador,
Honduras, Nicaragua.

Critoniopsis steinbachii H. Robinson,
sp. nov.
(Fig. 4)

Plantae frutescentes ad 3 m altae in ramis arcuatae; caules brunnescentes in nodis distincte leniter deflecti superne dense albotomentosi. Folia alterna, petiolis 1.0–1.5 cm longis; laminae membranaceae late oblongo-ovatae plerumque 12–24 cm longae 5–11 cm latae base rotundatae leniter cordatae margine multo minute denticulatae apice sensim anguste acuminatae supra planae sparse vel dense interdum evanescentiter pilosulae subtus vix pallidoires plerumque in nervis et nervulis dense pilosulae vel sublanatae, nervis secundariis pinnatis utrinque ca. 9 in angulis 45°–55° patentibus, nervulis vix prominulis. Inflorescentiae in ramis terminalibus thysoideae alterne ramosae, ramis aliquantum dense corymboso-cymosis, pedunculis 0.3–2.5 mm longis dense pallide puberulis. Capitula 5–6 mm alta; bractae involucri ca. 20 appresse imbricatae ca. 4-seriatae oblongae 1.0–3.5 mm longae 0.5–1.0 mm latae apice breviter acutae extus distaliter dense puberulae. Flores 6–8 in capitulo; corollae lavandulae ca. 4.0 mm longae extus ubique minute glanduliferae non piliferae, tubis basilaribus ca. 2 mm longae, faucibus ca. 1 mm longis, lobis ca. 1.2 mm longis; thecae antherarum ca. 1 mm longae base breviter tenuiter caudatae et denticulatae; appendices apicales antherarum oblongae ca. 0.4 mm longae et 0.18 mm latae, parietibus cellularum plerumque tenuibus. Achenia ca. 2.5 mm longa ca. 8-costata patentiter setulifera; setae pappi exteriores persistentes ca. 0.4 mm longae; setae pappi interiores facile deciduae ca. 3.5

mm longae distaliter sensim distincte lateriores. Grana pollinis in diametro ca. 30 μ m tricolporata spinulosa.

Type: BOLIVIA: Santa Cruz: Prov. Ichilo: Parque Nacional Amboró, ca. 15 km (SE) up the Río Surutú, moist tropical forest on lower montane slopes, sandstone, 17°44'S, 63°40'W, 700 m, arching shrub, 3 m, corollas lavender, 30 Aug 1985, J. C. Solomon & S. Urcullo 14171 (holotype US; isotypes MO, NY). Paratypes: BOLIVIA: Santa Cruz: Cerro Hosana, 27 Aug 1917, Steinbach 34993 (NY, US), 34995 (NY).

Specimens of *Critoniopsis steinbachii* have been either undetermined in herbaria or provisionally identified as *C. yungasensis* Britton. Relationship to the latter species seems closest, but the leaves of the latter are narrowly ovate with rounded bases, the upper surface is slightly rugulose with slightly prominulous veinlets, the hairs of the undersurface are longer, and the inflorescence is more open and more spreading.

Critoniopsis stellata
(Spreng.) H. Robinson,
comb. nov.

Conyza stellata Spreng., Neue Entdeck.
2:142. 1820.

Vernonia oppositifolia Less., Linnaea 4:273.
1829.

Vernonia stellata (Spreng.) Blake, Contr.
U.S. Natl. Herb. 22:587. 1924.

Vernonanthura stellata (Spreng.) H. Robinson, Phytologia 72:74. 1992.

Distribution.—Brazil.

The species is mostly distinct by its large, opposite leaves. In spite of the name of the species, the hairs are not stellate. The recent transfer of the species to *Vernonanthura* was in error.

Critoniopsis suaveolens
(H.B.K.) H. Robinson,
Phytologia 46:441. 1980.

Vernonia suaveolens H.B.K., Nov. Gen. et
Sp., ed fol. 4:30. 1818.



Fig. 4. Holotype of *Critoniopsis steinbachii* H. Robinson, Solomon & Urcullo 14171 (US).

Distribution. — Ecuador.

The type of the species is cited from Colombia, but all recent collections identified in this study are from Ecuador in Prov. Bolívar (Zak & Jaramillo 2533, 2538, 2721, 2740, MO, US) and Prov. Bolívar-Chimborazo (Zak & Jaramillo 2802, MO, US).

Critoniopsis tamana Badillo,
Ernstia 53:10. 1989.

Distribution. — Venezuela.

Critoniopsis tequilana
(S. Jones & Stutts) H. Robinson,
comb. nov.

Vernonia tequilana S. Jones & Stutts, Brittonia 33:544. 1981.

Distribution. — Mexico.

Critoniopsis tarchonanthifolia
(DC.) H. Robinson,
comb. nov.

Monosis tarchonanthifolia DC., Prodr. 5:77. 1836.

Vernonia tarchonanthifolia (DC.) Schultz-Bip., Linnaea 20:507. 1847.

Vernonia purpurascens Schultz-Bip. in Walp., Rep. Bot. Syst. 2:945. 1843.

Oliganthes karwinskii Schultz-Bip., Linnaea 20:505. 1847.

Cacalia karwinskii (Schultz-Bip.) Kuntze, Rev. Gen. Pl. 2:970. 1891.

Eremosis tarchonanthifolia (DC.) Gleason, Bull. New York Bot. Gard. 4:230. 1906.

Distribution. — Mexico.

Critoniopsis tomentosa
(La Llave & Lex.) H. Robinson,
comb. nov.

Turpinia tomentosa La Llave & Lex., Nov. Veg. Descr. 1:24. 1824, non *Vernonia tomentosa* (Walt.) Ell., 1821.

Vernonia paniculata DC., Prodr. 5:23. 1836.

Monosis tomentosa (La Llave & Lex.) DC., Prodr. 5:77. 1836.

Vernonia monosis Schultz-Bip., Linnaea 20:507. 1847.

Cacalia tomentosa (La Llave & Lex.) Kuntze, Rev. Gen. Pl. 2:969. 1891.

Cacalia paniculata (DC.) Kuntze, Rev. Gen. Pl. 2:970. 1891.

Cacalia monosis (Schultz-Bip.) Kuntze, Rev. Gen. Pl. 2:970. 1891.

Eremosis tomentosa (La Llave & Lex.) Gleason, Bull. New York Bot. Gard. 4:229. 1906.

Distribution. — Mexico.

Critoniopsis triflosculosa
(H.B.K.) H. Robinson,
comb. nov.

Vernonia triflosculosa H.B.K., Nov. Gen. et Sp., ed. fol. 4:40. 1818.

Gymnanthemum congestum Cass., Dict. Sci. Nat. 20:110. 1821.

Vernonia triantha Nees & Schauer, Linnaea 19:714. 1847.

Cacalia triflosculosa (H.B.K.) Kuntze, Rev. Gen. Pl. 2:971. 1891.

Cacalia triantha (Nees & Schauer) Kuntze, Rev. Gen. Pl. 2:971, 1891.

Vernonia palmeri Rose, Contr. U.S. Natl. Herb. 1:101. 1891.

Vernonia luxensis Coult., Bot. Gaz. (Crawfordsville) 20:41. 1895.

Vernonia dumeta Klatt., Bull. Soc. Roy. Bot. Belgique 35:277. 1896.

Eremosis palmeri (Rose) Gleason, Bull. New York Bot. Gard. 4:233. 1906.

Vernonia chacalana Blake, Contr. Gray Herb. 52:19. 1917.

Distribution. — Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama.

Critoniopsis tungurahuae
(Benoist) H. Robinson,
Phytologia 46:441. 1980.

Vernonia tungurahuae Benoist, Bull. Soc. Bot. Fr. 83:804. 1936.

Distribution. — Ecuador.

Critoniopsis turmalensis Badillo,
Ernstia 53:12. 1989.

Distribution. — Venezuela.

Critoniopsis uniflora
(Schultz-Bip.) H. Robinson,
comb. nov.

Vernonia uniflora Schultz-Bip., Linnaea 20:
506. 1847.

Eupatorium uniflorum Sess. & Moc., Pl.
Nov. Hisp. 164. 1890, non *Vernonia uni-*
flora Schultz-Bip.

Cacalia uniflora (Schultz-Bip.) Kuntze, Rev.
Gen. Pl. 2:968. 1891.

Cacalia baptizanda Kuntze, Rev. Gen. Pl.
2:968. 1891.

Distribution. — Mexico.

Critoniopsis uniflosculosa
(Cuatr.) H. Robinson,
Phytologia 46:441. 1980.

Vernonia uniflosculosa Cuatr., Bot. Jahrb.
Syst. 77: 81. 1956.

Distribution. — Colombia.

Critoniopsis unguiculata
(Cuatr.) H. Robinson,
Phytologia 46:441. 1980.

Vernonia unguiculata Cuatr., Bot. Jahrb.
Syst. 77:80. 1956.

Distribution. — Colombia.

The species is similar to *C. elbertiana* in the recurved basal margins of its median involucre bracts, but it seems to be restricted to the western or central cordilleras of Colombia, and the bases of its leaf blades seem more obtuse to nearly rounded. The type is from Depto. Valle, but specimens have been seen from Depto. Cauca (Luteyn, Luteyn & Morales 7445, NY, US) and Com. Choco (Silverstone-Sopkin 4493, US).

Critoniopsis uribei H. Robinson,
sp. nov.

Plantae subarborescentes a 3 m altae in
truncis robustae; caules leniter angulati

dense sordide tomentosi. Folia alterna, petiolis 0.7–1.5 cm longis; laminae valde rigide coriaceae late oblongae plerumque 9–14 cm longae 4–9 cm latae base rotundatae margine integrae in partibus anguste reflexae apice obtusae supra subnitidae minime prominule reticulo-venulosae minute glandulo-punctatae subtus dense brunneo-tomentosae, nervis secundariis pinnatis utrinque ca. 7 late patentibus. Inflorescentiae terminales pyramidales in ramis dense corymbiformes, bracteis in nodis alternis 2–4 inferioribus foliiformibus 4–9 cm longis 1.5–4.0 cm latis, penduculis nullis. Capitula 15–17 mm alta cylindrica, bractee involucri ca. 18 ovatae vel anguste ellipticae 2–10 mm longae 1.5–3.0 mm latae apice anguste rotundatae extus sparse vel dense tomentellae, marginis inferioribus in bracteis interioribus leniter reflexis. Flores ca. 4; corollae submaturae ca. 8 mm longae, tubis ca. 1.5 mm longis, faucibus ca. 2 mm longis, lobis ca. 4.5 mm longis base ca. 0.8 mm latae extus distaliter glanduliferis; thecae antherarum ca. 3.5 mm longae base distincte breviter truncatae caudatae; appendices antherarum 0.4–0.5 mm longae induratae; basi stylorum immatura indistincte nodulosi, pilis stylorum multiseptatis apice obtusis vel rotundatis. Achenia submatura ca. 4 mm longa 8–10-costata glandulifera; setae pappi flavescens 8–9 mm longae apice sensim distincte latiores, setae exteriores minutae indistinctae. Grana pollinis in diametro 50–55 μ m tricolporata spinulosa.

Type: COLOMBIA: Boyaca: Cordillera Oriental, carretera de Duitama a Charalá, más allá del Páramo de La Rusia, 3000 m, 12 Oct 1959, L. Uribe Uribe 3396 (holotype US).

The species is known only from the type specimen. Data with the type states “Arbolito pequeño, de 3 m de altura; tronco robusto; follaje oscuro: hojas en la haz de color verde muy subido; en al envés con tinte ceniciento o ferruginoso.” the only other members of the genus having heads as long are *C. glandulata*, which is almost wholly glabrous, and *C. huilensis*, which has

narrower, toothed leaves with less pubescence.

Critoniopsis ursicola
(Cuatr.) H. Robinson,
Phytologia 46:441. 1980.

Vernonia ursicola Cuatr., Bot. Jahrb. Syst. 77:82. 1956.

Distribution.—Colombia.

Critoniopsis weberbaueri
(Hieron.) H. Robinson,
comb. nov.

Vanillosmopsis weberbaueri Hieron., Bot. Jahrb. Syst. 40:352. 1908.

Vernonia ramospatana MacLeish, Syst. Bot. 9:135. 1984.

Distribution.—Peru.

The species has a strong superficial resemblance to *C. quinqueflora* of Brazil, but the two are not considered closely related. The anther appendages of the northern Peruvian species have thickened cell walls, but the appendages of *C. quinqueflora* have thin walls, as in other southern species.

Critoniopsis woytkowskii
(S. Jones) H. Robinson,
comb. nov.

Vernonia woytkowskii S. Jones, Fieldiana, Bot. n.s. 5:29. 1980.

Vernonia lambayequensis S. Jones, Fieldiana, Bot. n.s. 5:28. 1980.

Distribution.—Peru.

Isotypes have been seen of both *V. woytkowskii* and *V. lambayequensis*, and an additional specimen has been seen, Plowman, Sagástegui, Mostacero, Mejía & Peláez 14308 (NY, US), all from near Olmos, Dept. Lambayeque, Peru. *Vernonia lambayequensis* was originally stated to have pappus bristles ca. 9 mm long and corollas ca. 8 mm long, but the isotype has pappus bristles only ca. 6 mm long and corollas only ca. 6.5 mm long, scarcely longer than the mea-

surements stated for *V. woytkowskii*. All the specimens have setuliferous achenes. The isotype of *V. lambayequensis* looks different primarily because the heads are less mature.

Critoniopsis yamboyensis
(Benoist) H. Robinson,
comb. nov.

Vernonia yamboyensis Benoist, Bull. Soc. Bot. France 83:804. 1936 [1937].

Distribution.—Ecuador.

The species is unusual in the genus in having ovate rather than oblong or elliptical leaf blades.

Critoniopsis yungasensis
(Britton) H. Robinson,
comb. nov.

Vernonia yungasensis Britton, Bull. Torrey Bot. Club. 18:332. 1892.

Distribution.—Bolivia.

Co-types from the New York Botanical Garden have been examined and Rusby 1732 stamped from Columbia College Herbarium is designated here as lectotype.

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